Office Action Summary	Application No.	Applicant(s)	
	10/582,832	NIYAZ ET AL.	
	Examiner	Art Unit	
	SUSAN E. FERNANDEZ	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2009 and 28 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-57 and 59-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-57 and 59-61* is/are rejected.

7)☒ Claim(s) *56,57 and 59-61* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20100223* .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendments filed October 20, 2009, and January 28, 2010, have been received and entered.

Claims 1-30 and 58 are canceled. Claims 31-57 and 59-61 are pending and examined on the merits.

Claim Objections

Claims 56, 57, and 59-61 are objected to because of the following informalities: Claim 56 recites in the last line "a" which should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 49-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 49 is indefinite because it is confusing how the supporting element relates to the lid portion. The structure of the supporting element is unclear so it is confusing how the supporting element is fitted in the lid portion, or how the receiving surface is on a side remote from the lid portion. Thus, claims 49-52 are rejected under 35 U.S.C. 112, second paragraph.

Claims 49 and 51 are also confusing since it is unclear how the supporting element relates to a cell culture dish. As claim 49 recites that the supporting element is fitted in the lid

portion, the supporting element could be interpreted as the cell culture dish. It would appear to be the case given that claim 53 recites that the receiving element takes the form of a multiple culture dish. Thus, claims 49-52 are rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 31-33 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Schutze et al. (US 5,998,129) in light of Laulicht et al. (US 2007/0275080) and Mutz et al. (US 2002/0064809).

Schutze et al. discloses a process for sorting and harvesting biological objects on a planar carrer (abstract). For the selection and separation process, an object field of the carrier foil on which the selected biological object or the histological dissection is disposed, is cut out with a laser beam and transferred by a laser induced transport process to a collecting substrate which is directly above or below the carrier foil (column 3, lines 9-15). Furthermore, the carrier foil with the objects to be sorted and the collector substrate are housed in a closed container that has a UV transparent window for the laser beam (column 4, lines 20-23). The cut out area is propelled from the carrier foil onto the adhesive coated collector substrate by a laser induced transport

physical process (column 5, lines 25-28). The collector substrate may be a conventional micro titration plate (column 5, lines 28-30).

It is noted that the adhesive coated collector substrate may be an adhesive tape (column 5, lines 47 and 48) or an agar coated carrier (column 8, lines 1-4). Furthermore, the cells harvested may be subsequently histologically analyzed (column 8, lines 19-38). Thus, the specimen is processed and analyzed.

Laulicht et al. teaches that agarase liquefies agar and permits removal of agar from a cellular sample as cells encapsulated in agar and cellulose treated with agarase results in cells just encapsulated in cellulose (page 23, paragraph [0245]). Agarase is recognized in the instant specification as a suitable agent to add to the specimen that does not damage the specimen or impair its suitability for predetermined processing and/or analysis (page 12, lines 9-10). Therefore, instant claims 31, 33, and 35 are anticipated by Schutze et al.

Also, Mutz et al. teaches that agar supporting biological cells can be melted by heating it without affecting the viability of the cells in the overlying colony (page 18, paragraph [0119]). Therefore, instant claim 32 is anticipated by Schutze et al.

A holding of anticipation is clearly required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 31-33, 35, 56, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schutze et al. (US 5,998,129) in view of Liotta et al. (US 6,251,467), and in light of Laulicht et al. and Mutz et al.

As discussed above, Schutze et al. in light of Laulicht et al. and Mutz et al. anticipates claims 31-33 and 35. However, Schutze et al. differs from the claimed invention in that it does not expressly disclose that the adhesive agent of the collector substrate (the receiving element) is dissolved without impairing the suitability of the biological objects for further processing.

Liotta et al. discloses a method with the following steps: providing a tissue sample, contacting the tissue sample with a selectively activatable surface which can be activated to provide selective regions thereof with adhesive properties, identifying at least one portion of the tissue sample which is to be extracted, selectively activating a region of the transfer surface so that the activated region selectively adheres to the at least one portion of the tissue sample, and separating the transfer surface from the tissue sample while maintaining the adhesion between the activated region of the transfer surface and the at least one portion of the tissue sample

(column 3, lines 22-41). Furthermore, "during separation, the zone of cells of interest remains adhered to the transfer surface and is thus separated from the tissue sample, the zone of cells of interest may then be molecularly analyzed" (abstract).

Note also that the separation of tissue/adhesive film from the rest of the whole sample can be performed by focally dissolving either the adhesive tape of its bond to a substrate film (column 18, lines 56-59). Clearly the adhesive layer is dissolved.

The Liotta invention allows for recovery and analysis of both active enzymes and mRNA of a sample (column 8, lines 19-21) and for transporting the extracted regions to an automated analyzer which can perform automated analysis of the extracted regions (column 6, lines 23-30). Hence processing and analysis of the cells occurs following the extraction of the selected zone of tissue sample.

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have dissolved the adhesive agent after the collection of the harvested biological object of the process taught by Schutze et al. One of ordinary skill in the art would have been motivated to do this since it would have permitted the separation of the tissue glued to the adhesive coating from the collector substrate for the analysis taught by Schutze et al. As shown in Liotta et al., dissolving the adhesive agent attached to a tissue sample still results in a tissue sample suitable for processing and analysis. Thus, instant claims 56 and 61 are rendered obvious.

A holding of obviousness is clearly required.

Claims 31-40, 43-49, 52-57, and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schutze et al., Liotta et al., Laulicht et al., and Mutz et al. as applied to claims 31-33, 35, 56, and 61 above, and further in view of Akiyoshi et al. (US 4,870,005), Sundstrom et al. (US 5,913,849), Beuhler et al. (US 2002/0035167), and Setterquist et al. (Nucleic Acids Research. 1996. 24(8): 1580-1581).

As discussed above, Schutze et al., Liotta et al., Laulicht et al., and Mutz et al. render claims 31-33, 35, 56, and 61 obvious. However, they do not expressly disclose that the adhesive agent is a hydrogel such as agarose or a hydrogel based on collagen or polyacrylamide.

Akiyoshi et al. discloses that agarose or polyacrylamide can act as an adhesive layer (column 8, lines 53-56).

Sundstrom et al. teaches that hydrogel adhesives can include collagen (column 5, lines 7-9).

Beuhler et al. teaches that polyacrylamide hydrogels can be used to adhere to biological molecules (page 1, paragraph [0003]).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have used agarose or a hydrogel based on polyacrylamide or collagen as the adhesive agent of the collector substrate when practicing the Schutze invention. One of ordinary skill in the art would have been motivated to do this because they are known adhesives. The substitution of one adhesive agent for another would have led to the predictable result of sample collection. Thus, instant claims 36 (since agarose can be the adhesive layer), 38 (agarose and hydrogels based on polyacrylamide or collagen), 39 (since agarose can be the adhesive layer), 46-48, 49 (Schutze invention is in a closed container), 52-55, 59, and 60 are rendered obvious.

The references also do not disclose that the hydrogel (for instance, agarose) comprises agents for carrying out the processing and analysis following the capture of the biological objects.

Setterquist et al. points out that PCR is used for diagnostic testing, such as HLA typing, genetic screening, and microbial identification (page 1580, first paragraph). The reference indicates that "We have developed a technique for encapsulating all of the components of a PCR reaction, including polymerase as well as gel loading buffer and dye, in an agarose matrix that can be easily shipped in pre-aliquoted tubes and stored for months at -20°C" (page 1580, first paragraph). This technique allows for room temperature assembly of reactions, reduced cross-contamination (page 1581, last paragraph), and also reduces the use of time-consuming and repetitive pipeting (page 1580, first paragraph).

At the time the invention was made, it would have been obvious to have included components of a PCR reaction in the agarose adhesive used for performing the invention rendered obvious by Schutze et al. and the other references. One of ordinary skill in the art would have been motivated to do this since it would have reduced cross-contamination and time for performing the analysis (by PCR) of the biological objects harvested by the methods of Schutze et al. Thus, instant claims 34, 37, 40 (since agarose suitable for combination with biological objects for PCR), 43-45, and 57 are rendered obvious.

A holding of obviousness is clearly required.

Claims 31-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schutze et al. in view of Akiyoshi et al., Sundstrom et al. (US 5,913,849), Beuhler et al. (US

2002/0035167), Setterquist et al., and Oldenburg et al. (US 6,027,695) and in light of Laulicht et al., Mutz et al., and Walthall et al. (US 4,902,295).

As discussed above, Schutze et al. in light of Laulicht et al. and Mutz et al. anticipates claims 31-33 and 35. However, Schutze et al. differs from the claimed invention in that it does not expressly disclose that the adhesive agent of the collector substrate (the receiving element) is agarose or a hydrogel based on collagen or polyacrylamide.

Akiyoshi et al. discloses that agarose or polyacrylamide can act as an adhesive layer (column 8, lines 53-56).

Sundstrom et al. teaches that hydrogel adhesives can include collagen (column 5, lines 7-9).

Beuhler et al. teaches that polyacrylamide hydrogels can be used to adhere to biological molecules (page 1, paragraph [0003]).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have used agarose or a hydrogel based on polyacrylamide or collagen as the adhesive agent of the collector substrate when practicing the Schutze invention. One of ordinary skill in the art would have been motivated to do this because they are known adhesives. The substitution of one adhesive agent for another would have led to the predictable result of sample collection. Thus, instant claims 36 (since agarose can be the adhesive layer), 38 (agarose and hydrogels based on polyacrylamide or collagen), 39 (since agarose can be the adhesive layer), 46-48, 49 (Schutze invention is in a closed container), and 52-55 are rendered obvious.

The references differ from the claimed invention in that they do not expressly disclose that the hydrogel (for instance, agarose) comprises agents for carrying out the processing and analysis following the capture of the biological objects.

Setterquist et al. points out that PCR is used for diagnostic testing, such as HLA typing, genetic screening, and microbial identification (page 1580, first paragraph). The article points out that "We have developed a technique for encapsulating all of the components of a PCR reaction, including polymerase as well as gel loading buffer and dye, in an agarose matrix that can be easily shipped in pre-aliquoted tubes and stored for months at -20°C" (page 1580, first paragraph). This technique allows for room temperature assembly of reactions, reduced cross-contamination (page 1581, last paragraph), and also reduces the use of time-consuming and repetitive pipeting (page 1580, first paragraph).

At the time the invention was made, it would have been obvious to have included components of a PCR reaction in the agarose adhesive used for performing the invention rendered obvious by Schutze et al. and Akiyoshi et al. One of ordinary skill in the art would have been motivated to do this since it would have reduced cross-contamination and time for performed the analysis of the biological objects harvested by the methods of Schutze et al. Thus, instant claims 34, 37, 40 (since agarose suitable for combination with biological objects for PCR) and 43-45 are rendered obvious.

Note that Walthall et al. teaches that agarose can be dissolved by heating at temperatures of 37-65°C or treatment with agarase (column 10, lines 61-64). Agarase is recognized in the instant specification as a suitable agent to add to the specimen that does not damage the specimen or impair its suitability for predetermined processing and/or analysis (page 12, lines 9-

10). Furthermore, Setterquist et al. teaches that PCR reactions are performed at 94 and 60°C, thus rendering these temperatures for dissolving agarose suitable for the processing and analysis of the harvested biological objects. Thus, instant claims 41 and 42 are rendered obvious.

Furthermore, the references differ from the claimed invention in that they do not expressly disclose that the supporting element (microtiter plate) is made of silicone or acrylic polymer.

Oldenburg et al. teaches that microtiter plates can be formed from a highly reflective material, such as acrylic, so as to enhance the performance of the microtiter plate when used for measurement of luminescence (column 8, lines 30-35).

At the time the invention was made, it would have been obvious to the person of ordinary skill in the art to have used acrylic polymer as the material for the supporting element (microtiter plate) of Schutze et al. One of ordinary skill in the art would have been motivated to do this since acrylic polymer is recognized material for microtiter plates. Thus, instant claim 50 is rendered obvious.

With respect to instant claim 51, the selection of a suitable supporting element height would have been a matter of routine optimization on the part of the skilled artisan. Thus, instant claim 51 is rendered obvious.

A holding of obviousness is clearly required.

Response to Arguments

Applicant's arguments, filed October 20, 2009, and January 28, 2010, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

It is noted that the agarose mentioned in Liotta is not the "activatable adhesive layer" described in Liotta. While the indication in Liotta that the adhesive layer is "activatable" is not necessarily equivalent to being dissolvable, it is respectfully noted that Liotta teaches that the separation of tissue/adhesive film from the rest of the whole sample can be performed by focally dissolving either the adhesive tape or its bond to a substrate film (column 18, lines 56-59). Thus, the adhesive tape is dissolvable and is dissolved in the process. Liotta is now applied for the purpose of teaching the step of dissolving the adhesive coating of the collecting substrate of Schutze et al., rather than its teaching of different types of adhesive layers.

The adhesive coated collector substrate of Schutze et al. may be an agar coated carrier (column 8, lines 1-4). Agar can be dissolved by agarose, which is recognized in the specification as not detrimental to a biological sample for processing and/or analysis. Therefore, the adhesive coating (agar) is indeed dissolvable without impairing the suitability of the specimen for predetermined processing and/or analysis.

With respect to the adhesive/extraction reagent recited in Liotta of "a mixture of piccolyte and xylene," it is noted that Liotta is now applied for the teaching of the dissolving step, rather than the teaching of the adhesive reagent itself. While Liotta provides a teaching of dissolving tissue material, it is noted that it is for analysis purposes, thus the specimen is indeed

still suitable for "predetermined processing and/or analysis." Further still, Liotta is not applied in the rejections for its teaching of the steps for the extraction of a region of interest.

While the applicant asserts that the cell culture dish (previously recited as the container) is not a feature of the receiving element, it is unclear from the claims that this is the case. Claim 49 recites that the supporting element is fitted in the lid portion. Therefore, the supporting element could be interpreted to be the cell culture dish. Moreover, claim 53 recites that the receiving element takes the form of a multiple culture dish.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN E. FERNANDEZ whose telephone number is (571)272-3444. The examiner can normally be reached on Mon-Fri 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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